

Logging On

Username: xraydetector23\pco

Password: !aps9490!

Starting Software

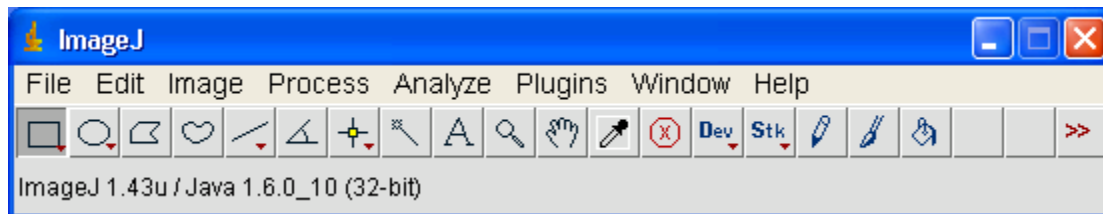
Hit these 3 icons:

1. Shortcut to PCO_start_medm
2. Shortcut to PCO_start_IOC
3. Shortcut to ImageJ

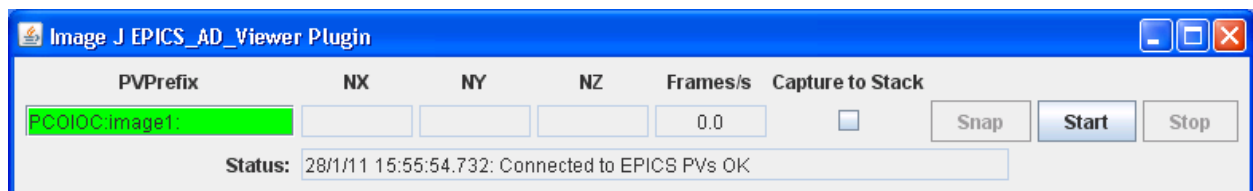
To stop the software, just close all the windows.

In Image J, open the menu

Plugins->EPICS Area Detector->Epics AD Viewer



You will see the following window:



Hit the START button on this window. This starts the Image viewer

The window below is the PCO User window. It has virtually all the settings a typical user needs.

PCO_User.adl

asyn port

Null

EPICS name

PCOIOC:cam1:

Manufacturer

PCO-Cooke

Model

PCO Dimax Camera

Sensor size

2016

2016

480

500

ROI Size

500

500

Exposure time

0.000

0.000

Delay Time

0.000

0.000

Frame Rate

1000.000

1000.000

Acquire period

0.000

0.001

Images

1000

1000

Images complete

4173

Frame Rate

0.000

LiveView

No

No

Done

Acquire

Start

Stop

Detector state

Idle

Time remaining

0.000

Image counter

0

4173

Image rate

0.0

Array callbacks

Enable

Enable

Reset Memory

Seg0 NImages

999

Seg0 Max Images

999

Dump Counter

999

Dump Wait(ms)

50

13

Max Rate(kB/s)

20000

20000

MissedFrames

0

0

RepeatFrames

0

0

Dump Mem

Cancel

More

Taking Data Into Memory in PCO Dimax

Seeing Data

Open the NDStdArrays window from the Menu. Make sure that Callbacks are Enabled and Blocking is set to NO. The settings should already be correct.

Setting Image Size

Set ROI Size x and Y. Type in numbers from 100x100 to 2016x2016. It will take about 5s for the grabber and camera to reconfigure. Type in your image size, say 500 by 500. The driver will pick exact image sizes supported by the grabber and camera close to your settings.

Setting Frame Rate

Sett Frame Rate to 1000, for 1000fps. Set #Images to 1000, to store 1000 images to memory.

Setting Expose Time, Delay Time

You can set expose time and delay time instead of Frame Rate.

Take Data

Hit Acquire Start. You can see the memory fill up by watching Seg0 NImages. You can see frame rate by looking at Frame Rate. For viewing data as it is taken, set Live View to YES. This mode is not recommended, because these files will be saved. Make sure all file saving is OFF.

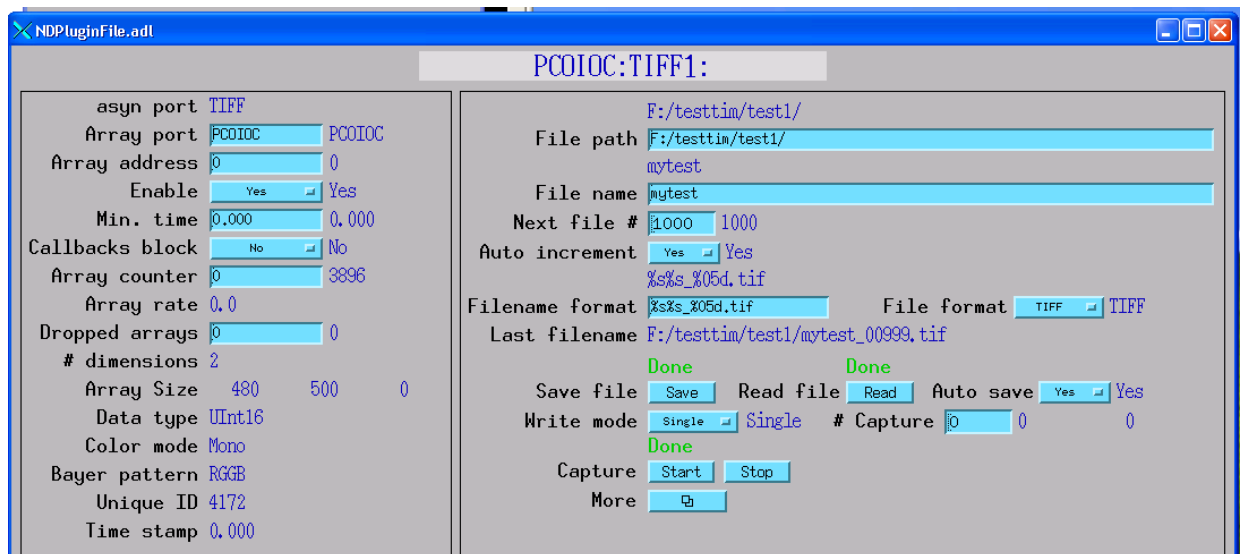
Dump Data to Computer

Set max Rate to 30000, for 30MB/sec. this is a pretty safe number to avoid losing data when writing to disk. Hit Dump Mem. You should see data appear in the Image J Image viewer. If you can't see the images, hit START in the Image J EPICS AD Viewer Plugin window. Note, that this data is not being saved unless you set up file saving. Hit Cancel to stop the data dump.

Saving Data

On the PCO_User.adl window, note the More menu at bottom. Hit and select the TIFF plugin 1.

1. Most of the settings on the file window should be automatically be set to correct values.
2. On NDPluginFile.adl window, Set Enable to Yes. (on left)
3. Make sure Callbacks block is set to YES
4. Set File path to F:/testtim/test1/ You must make sure slashes are exactly as noted here.
5. Set File Name to mytest
6. Set Auto Increment to YES
7. Set Filename Format to %s%s_%05d.tif
8. Set Autosave to YES
9. On PCO_User.adl, Hit Dump Mem. Tiffs will be written to disk.



How to tell if everything worked

1. On PCO_User.adl, check Missed Frames and Repeat Frames. They should remain at 0. If not, then either a frame was repeated or one was missed. You have to Cancel and Dump the memory again. The images will still be in the camera. The driver checks 16 consecutive pixels in each image. If to images have the same pixel values then it is assumed that the image repeated.
2. Check on the TIFF NDPluginFile.adl window, Dropped Arrays; it should remain zero. If not, then the disk is too slow. You must Dump the whole camera memory again. Set Dropped Arrays to zero before dumping again to avoid confusion.

Special Dimax Settings

The dimax defaults to useful settings. If you want special settings, on PCO_User window, open for More menu, Pco Params. You will see many settings for the dimax camera.

1. For experiment setup, set Live View to YES. The TIFF file saving plugin will automatically disabled. In this way you can see images live from the camera. It will stream forever and not fill the on-camera memory. Set Live View to NO for storing data into memory. Setting to NO will enable the file saving TIFF plugin.
2. For Correlated Double Image Mode, set CDI mode to YES (Left). In CDI mode, the frame rate will not be exactly what you set because of overhead. The overhead depends on image size. Also, the memory will only store only $\frac{1}{2}$ as many images. Play with it so you understand what will happen.
3. For streaming data instead of recording, set Storage Mode to FIFO. This is not as useful for very fast frame rates as camera link cannot keep up.
4. For Triggering from connector on the Dimax instead of software, set Trigger Mode to External. For software triggering, set to AUTO. In External Mode, hit Acquire Start on the PCO User window, then provide the trigger.
5. It is best to not mess with settings too much. If the camera gets messed up because of your curiosity, then power down the dimax and power back up.
6. For super users, the dimax has four segments of recording memory. You can store data into four independent segments and dump independently. See dimax manual. This feature can be accessed through the PCO User window, More Menu, select Pco Memory. If you do not understand this, then forget you read this.

Other Settings

The EPICS software interface has many features you probably will not use. There are windows for various file types, special camera settings, and frame grabber control. You should not need to use these. The PCO User screen has almost everything a user will need, except perhaps CDI mode.

Getting help

APS Detector Group:

2-9490

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